
Carrier Remote IPE acceptance testing

This section describes Carrier Remote IPE functional testing to verify that functions and features associated with the Carrier Remote IPE are operating correctly.

Overview

Acceptance testing is conducted after the system has been installed, is powered up, and appears to be functioning correctly, that is, all LEDs, displays, and system messages indicate that the system is operating correctly. The Carrier Remote IPE acceptance testing should be conducted after:

- a previously installed system is upgraded with Carrier Remote IPE equipment and generic software X11 release 21 with REM_IPE 286 carrier software or higher and operates correctly without Carrier Remote IPE equipment
- a newly installed system with Carrier Remote IPE equipment using generic software X11 release 21 with REM_IPE 286 carrier software or higher appears to operate correctly

Acceptance testing verifies the operation of system functions and features at the remote site equipped with the Carrier Remote IPE.

Acceptance testing consists of:

- checking the system
- preparing the system for testing
- testing system functions at the Carrier Remote IPE site

Checking the system

After Carrier Remote IPE equipment has been installed, carrier connections verified, and configured, you can visually inspect Carrier Remote IPE cards to make sure they are operating correctly by observing their LEDs:

- Execute the **D S** and **D S D** commands to check carrier alarm levels for each carrier at both the local and remote site. If all alarm levels are 0 at both ends, carrier links are operating correctly.
- Check the card LED located at the top of the Local Carrier Interface card faceplate. If the card LED on the Local Carrier Interface card is off, the card is operating correctly. If the card LED is on, the card is disabled or faulty. To enable the Local Carrier Interface card or to correct a problem, go to [“Carrier Remote IPE fault isolation and correction” on page 185](#).
- Check carrier LEDs on the Local Carrier Interface card faceplate. If all LEDs are off, carriers are operating correctly. If one or more carrier LEDs are on, one or more carriers are faulty. If the amber LED is on, the card is in the maintenance state.
- Check the card LED located at the top of the Remote Carrier Interface card faceplate. If the card LED on the Remote Carrier Interface card is off, the card is enabled and operating correctly. If the card LED is on, the card is disabled or faulty. To enable the Remote Carrier Interface card or to correct a problem, go to [“Carrier Remote IPE fault isolation and correction” on page 185](#).
- Check carrier LEDs on the Remote Carrier Interface card faceplate. If all LEDs are off, carriers are operating correctly. If one or more carrier LEDs are on, one or more carriers are faulty. If the amber LED is on, the card is in the maintenance state.
- Check the hexadecimal display on the Remote Carrier Interface card. Refer to the Appendix A to identify hexadecimal codes displayed by the Remote Carrier Interface card during self-test.

If the display and all indicator LEDs on Carrier Remote IPE equipment indicate good operating condition, the equipment is functional and you can proceed with setting up the necessary equipment for acceptance testing.

Setting up test conditions

To conduct acceptance testing, you must have a setup that can verify basic system functions and features initiated and terminated at the Carrier Remote IPE site. You may be able to use the system as configured at the site according to the customer requirements and not have to modify the configuration to perform the acceptance testing.

Configure carrier links with a spare link so that you can test the transfer of traffic from a primary link to the spare link.

To conduct the acceptance testing, make sure that each Carrier Remote IPE line card has at least one telephone connected to one of its subscriber loops. If possible, use some 2500 telephones to check the ringing generator and the DTMF operation. Also, make sure that a terminal is connected to the MMI port.

If you have Carrier Remote IPE main and expansion cabinets, install at least one line card in test card slots 0, 9, 10, and 15 of cabinets and connect at least one telephone to each line card subscriber loop.

Performing acceptance testing

Since functions and features at the Carrier Remote IPE site are identical to functions and features at the local system site, the main purpose of acceptance testing is to verify that the carrier equipment and the carrier links are functioning correctly. This can be accomplished by:

- performing basic voice calls
- using the MMI terminal to configure and maintain Carrier Remote IPE equipment
- checking the protection switching of carrier links when configured with one spare carrier link

Voice calls

A voice call can be established between two voice terminals across a network, between two terminals on the same PBX, and even between two terminals on the same line card.

Acceptance testing of Carrier Remote IPE voice calls is conducted when testing the following basic system features supported by telephone sets connected to subscriber loops at the remote site:

- placing a call to the remote site
- placing a call in call hold/call retrieve

Placing a call to the remote site

From the local system site, place a call to a Carrier Remote IPE site by dialing a remote station directory number (extension number).

Note: The system treats Carrier Remote IPE subscriber loops as local loops, so you need to dial only the extension number to access that station.

To perform a call test:

- 1 From a terminal at the local system site, dial a terminal at the Carrier Remote IPE site and establish an active call connection.
- 2 Verify that voice transmission is established by talking with the person at the other terminal. Make sure the speech is clear in both directions.
- 3 Maintain the connection and ask the person at the remote site to test some basic calling features such as call hold/call retrieve.
- 4 Terminate the call.

Call hold/call retrieve

Call hold is used to place an active call on hold in order to answer an incoming call or place an outgoing call. After releasing an incoming or an outgoing call, you can retrieve the call on hold. For the Carrier Remote IPE main and expansion cabinets, establish calls from stations connected to the subscriber loops in the main and the expansion cabinets to verify the intercabinet cable connection.

To perform a call hold/call retrieve test:

- 1** From a terminal at the local system site, dial a terminal at the Carrier Remote IPE site and establish an active call connection.
- 2** Verify that voice transmission is established by talking with the person at the other terminal.
- 3** Press the Hold key at the remote site to place the active call on hold.
Note: To find out how to use the feature keys on different terminals, consult the user manual that is supplied with the terminal.
- 4** Place an outgoing call from the terminal at the remote site by dialing an idle terminal located at the local system site.
- 5** Complete this outgoing call by first checking the voice clarity in both directions and then hang up.
- 6** Have another terminal call you while the first call is still on hold.
- 7** Answer the incoming call and place it on hold.
- 8** Retrieve the call first held.
- 9** Complete the call and hang up.
- 10** Retrieve the second call on hold.
- 11** Complete the call and hang up.

You can repeat this test for terminals connected to different subscriber loops on the same card and different subscriber loops on different line cards in the Carrier Remote IPE module or cabinet. By making these calls you generate traffic, which will be shown in the traffic report.

Data calls

Use only one carrier link between the local and the remote sites. To verify that a call connection supports data calls and that when a carrier link is in Alarm Level 2 no new data calls will be allowed, follow the steps below:

- 1 From a computer or a data terminal at the remote site, access a terminal or computer at the local Meridian 1 site, or vice versa.
- 2 Transmit and receive data files in both directions. Open a transmitted file to verify its integrity.
- 3 Use the BERT set to insert bit errors into the carrier link transmitting data so it exceeds Alarm Level 2 threshold.
- 4 Since the sparing feature is not available, the carrier will continue to operate in Alarm Level 2 condition.
- 5 From a different data terminal attempt to establish a data call to a computer or terminal at the opposite side of the link.
- 6 The connection will not be established and the No New Data (NND) parameter on the display will show YES (yes no new data) for the carrier used, when you execute the **STAT** command in LD 32.
- 7 Remove the BERT set from the carrier link and retry the data call connection. Wait a few minutes or use the MMI command **C A** before retrying so that the carrier bit error monitor will determine that the cause of bit errors is no longer present. The data call will now be established because the bit error source has been removed and the Alarm Level is back to 0.
- 8 Verify the integrity of this data connection by checking the transmitted files.
- 9 Disconnect the data calls.

Checking the MMI terminal operation

Connect an MMI terminal to the Local Carrier Interface card at the local site and another MMI terminal at the Carrier Remote IPE site.

- 1 Set the current mode of the MMI terminal to the MMI mode by executing the **L <address>** command on the MMI terminal at the local system site. The Password is: **M1LINK**.
- 2 Check the status of the Local Carrier Interface card by executing the **D S [P]** command.
- 3 Check the status of the Remote Carrier Interface card by executing the **D S D [P]** command. This command is sent over the carrier link to the Remote Carrier Interface card for execution.
- 4 Check the log file content by executing the **D L [P]** command to display log messages from the file starting with the oldest message. Examine the messages.

Checking carrier link protection switching

To verify that the carrier link protection switching is operating correctly, conduct the following tests with carrier links:

- forced carrier failure (disconnect carrier link at the I/O panel)
- forced switchover

Note: This test can be conducted only when carrier 2 is configured as a spare carrier link.

If both carrier 0 and carrier 1 are faulty, carrier 0 will always have sparring priority over carrier 1.

Forced carrier failure switchover

To conduct this test:

- 1 Check the status of all three links by executing the **D S [P]** command from the MMI terminal. Make sure that the two primary and the spare links are functional without an alarm condition.
- 2 Establish a call from the Carrier Remote IPE to the local system site over carrier link 1. Refer to [“Voice calls” on page 156](#) to establish the call.
- 3 Manually disable carrier link 1 by unplugging the link at the I/O panel. The call will be transferred to carrier link 2 (spare).
- 4 The call should continue to be established.
- 5 Manually disable carrier link 0 by unplugging the carrier cable at the I/O panel.
- 6 The spare link 2 should release carrier link 1 and spare carrier link 0.

Note: Carrier 0 has sparing priority over carrier link 1, therefore, when carrier 0 was disabled, the spare carrier 2 terminated carrier 1 sparing and established sparing of carrier 0.

- 7 Verify that the call is no longer established over the spare link (link 2), since the call was established over carrier 1, which has been dropped and is no longer spared. Execute the **STAT** command in LD 32 to show the sparing status.
- 8 Reconnect carrier link 0. As soon as carrier link 0 recovers and becomes operational, the spare carrier 2 will automatically spare carrier 1.
- 9 Reestablish the call over carrier link 1, which is now spared over carrier link 2.
- 10 Check and make sure that the call is established.
- 11 Reconnect carrier link 1 and wait until carrier 1 has reestablished communication. The established calls should continue to be connected over the carrier link 1.
- 12 Disconnect the call by hanging up the receiver on the telephone.

Removing the test setup

After acceptance testing has been completed and the results show that the system is operating correctly, you should remove the setup you used to conduct the testing and restore equipment according to the customer configuration.

If you used the actual customer configuration to perform these tests, you do not have to change or remove the setup.

Generating traffic reports

Use system traffic reports to identify calls made during acceptance testing to and from the Carrier Remote IPE site.

The system traffic network loop report TFS001 provides statistics on the number of timeslots used by each loop and the traffic over these loops as measured in CCS (hundred call-seconds).

For more information on traffic reports, refer to the Traffic control program LD 02 in *X11 input/output guide* (553-3001-400).